ANNULAR INFINITE CYLINDER

Void Core

An annular cylinder whose inner radius, r_o, and extrapolated annulus thickness, t, is known and which has a void in the center will have a geometrical buckling that is a function of r_o, t and the outer extrapolation distance, λ. The graph on page II.B.2-5 shows the relation. If $\Delta r = t + \lambda$, the value of $\Delta r/r_o$ will give a value for $\sqrt{B_g^2}\, r_o$. Dividing this by r_o and squaring will give the geometrical buckling of the system. Conversely, if the desired buckling is known, the inside radius or the annulus thickness can be found.

Isolating Core

Calculations have been made for the relationship between B^2, r_o and Δr for the annular cylinder which has its core filled with material which effectively eliminates interaction of the annulus across the core. However, since small cores are seldom isolating and since for large cores the annulus may be treated as a slab, the relationship will not be reproduced here.